

3.0 FIRE HAZARD ASSESSMENT

Dynamac assessed the hazard posed by wildland fire within the Hoback Ranches assessment area through fuel and structure surveys, information obtained from a public meeting, and interviews with public officials. The majority of information obtained for this report was gathered during the time period between July 15 and 21, 2002.

3.1 Field Survey

BLM's Pinedale Field Office in Pinedale, Wyoming requested that Dynamac survey at least five fuel assessment points in the Hoback Ranches assessment area, within the WUI area (**Map 1, Appendix A**). Dynamac surveyed eight assessment points within the WUI, six of which were on public land managed by BLM, and two of which were on the boundary between USFS-managed land and private land. The points were chosen from areas where public land formed an interface with private land, and, where possible, additional points were surveyed that were representative of vegetation in remote areas. As public land is not specifically fenced or demarcated "on the ground," the points that Dynamac surveyed were located by approximating the locations of public land on a Hoback Ranches Fuels Treatment Plan map, which delineated topography and land ownership and depicted fuel types, and a USFS map of the Bridger-Teton National Forest. Dynamac assessors then drove and/or hiked to the selected points. Point data was obtained using hand-held Global Positioning Systems (GPS), which recorded Universal Transverse Mercator (UTM) coordinates for plots of interest, based on North American Datum 1927 (NAD27) for Zone 11. Elevations were also obtained using the GPS unit. After collection in the field, the UTM coordinates were geo-corrected to account for satellite positions. A summary of the actual fire hazard assessment points is presented in **Table 2**. This table includes the township, range, section, actual UTM coordinates and elevation, and photo log identification numbers for each assessment point.

Digital photographs were taken of the surrounding area in the four cardinal directions at each assessment point. The assessment point photos were taken in the following sequence: North, East, South and West. Photographs are designated by the disk and photo identification number. For example, photographic identification number H01004 would be Hoback Ranches Disk 1, Photo 004. The photo identification numbers are presented in Table 2, and the photographs are located in **Appendix B** with their respective hazard assessment form.

At each assessment point, a fire hazard assessment form (Form 1) was completed which rated the characteristic of the land features and fuel sources located within a 50-meter radius (Appendix B). The rating elements included slope, aspect, elevation, vegetation type, fuel type, fuel density, and fuel bed depth and were assigned to a risk category that was defined by BLM. Each point was evaluated to determine if the potential fire hazard was low (Class A), moderate (Class B), or high (Class C). Additionally, tree canopy cover measurements were collected using a densiometer at each point in each of the four cardinal directions, downloaded into the GPS unit, and averaged to obtain a value for each point. The results of the fuel hazard survey, including canopy cover percentages, are reported in **Table 3**.

TABLE 2: Summary of Hoback Ranches Fire Hazard Assessment Survey Point Field Data

Survey Point	Township	Range	Section	North (UTM)	East (UTM)	Elevation (feet)	Date	Photo Log (Disk, Photo Nos.)	Photo Numbers and Cardinal Direction
<i>Township 36N Range 112W</i>									
1	36N	112W	3	4774073.235	564595.290	8,115	7/16/2002	H01004007	1004N, 1005E, 1006S, 1007W
2	36N	112W	3	4773790.588	564170.469	7,977	7/16/2002	H02001004	2001N, 2002E, 2003S, 2004W
3	36N	112W	8	4772367.850	561060.034	7,920	7/16/2002	H02006009	2006N, 2007E, 2008S, 2009W
4	36N	112W	5	4773363.736	561382.794	7,521	7/20/2002	H04003006	4003N, 4004E, 4005S, 4006W
5	36N	112W	7	4772439.127	560197.088	7,923	7/20/2002	H04008011	4008N, 4009E, 4010S, 4011W
6	36N	112W	9	4772760.515	563320.145	8,231	7/21/2002	H05001004	5001N, 5002E, 5003S, 5004W
<i>Township 36N Range 113W</i>									
8	36N	112W	4	4773980.829	554227.741	7,562	7/21/2002	H06001004	6001N, 6002E, 6003S, 6004W
<i>Township 37N Range 111W</i>									
7	37N	111W	31	4774913.631	563791.886	7,824	7/21/2002	H05005008	5005N, 5006E, 5007S, 5008W

Information was also collected from 14 sections that contained private land located within one mile of Federal and state lands within the assessment area. A structural hazard assessment form (Form 2) was completed which rated the survivability of structures within each of these sections, based on building materials, the distance of flammable fuels to the structures located within a section, as well as road conditions and accessibility (**Appendix C**). The information recorded on Form 2 represented the average condition for the section. A USFS map of the Bridger-Teton National Forest, an assessment map provided by BLM, and a Fuel Treatment Plan map, also provided by BLM, were used to navigate to the sections. The sections were surveyed from existing roads, vantage points and private driveways or approaches. The rating elements included structure density, proximity of flammable fuels to the structures, building materials, survivable space, types of roads, response times, and accessibility. Each element was assigned to a category defined by BLM. Each of these were evaluated to determine if the potential fire hazard was low (Class A), moderate (Class B), or high (Class C). All sections that were assessed included structures. Latitude and longitude waypoints were taken at, or as close as possible to, all structures that were accessible. The results of the structure hazard survey are reported in **Table 4**.

3.2 Public Meeting

A public meeting convened on July 17, 2002, at the Bondurant Fire Hall from 6:00 to 9:00 pm. The community was invited to attend through a newspaper article in the local paper, and from announcements that were posted in public places such as Hoback Ranches information and notice boards. Hoback Ranches homeowners assisted in contacting other Hoback Ranch residents by telephone, providing them with meeting information.

Dynamac and BLM personnel attended the meeting to distribute brochures, obtain information, and serve as an informational resource to those attending the meeting. The brochures provided information on ways to reduce the risk of wildfire around structures. Dynamac staff requested the participants to respond to a survey (**Appendix D**), which questioned the community's perception of the hazards of wildfire, ways to mitigate wildfire, recent actions that had been taken in the community to reduce the hazard of wildfire, and important values in the assessment area that could be at risk to wildfire.

A second public meeting was conducted on September 18, 2002 at the Bondurant Elementary School (**Appendix F**). This meeting presented the findings of the hazard assessment and mitigation report. Discussions with the public, BLM, USFS, State of Wyoming Division of

Forestry, and Hoback Ranches residents about the recommended actions to reduce the risk of wildfire in the assessment area were conducted. These included shaded fuel breaks, forest thinning and tree removal. Two Fire Behavior/Fire rate and direction of spread maps were provided. These maps were based upon the Far Site fire computer model using 30 years of weather data and standard fuel moistures. One map showed the potential fire without fuels treatment, the second map portrayed the potential with fuels treatment.

3.3 Interviews of Public Officials

To obtain data for the community profile (Form 3, **Table 5**), a Dynamac Community Relations Specialist conducted interviews with numerous local public officials and residents. The information obtained from the interviews is presented in **Appendix E**. Individuals or groups interviewed include: the county fire warden, emergency management director, county sheriff, USFS and State of Wyoming Forestry Division employee(s), and local residents. Dynamac's Community Relations Specialist explained their position as contractors with BLM, provided background information on the project, including a map of the assessment area, and asked questions to obtain information for the community profile.

4.0 GENERAL SUMMARY: FIRE FUEL HAZARD, STRUCTURAL FIRE ASSESSMENT, AND COMMUNITY PROFILE

4.1 Form 1: Fuel Hazard Assessment

The results of the fuel hazard assessment are presented in **Table 3** and **Maps 2 and 3**. Forms for all survey sites are contained in Appendix B. The dominant hazardous fuels in the assessment area are the overstocked mixed conifer stands with saplings as ladder fuels that occur on lands south and north of Hoback Ranches and on private land in the eastern sections of Hoback Ranches.

Aspen stands and sagebrush/grass fuel types did not receive fuel hazard assessments. Sagebrush/grass fuels on Hoback Ranches can present hazardous fuel conditions on slopes of the assessment in late summer and fall. Resistance to control in the sagebrush/grass fuel will not be as great as in the mixed conifer; however, if wind and slope combine or align, rates of fire spread will increase exponentially.

The assessed lodgepole pine/mixed conifer fuel types will exhibit a high resistance to control and will make initial attacks difficult when fire danger ratings are high, combined with low relative

humidity and fuel moisture, and high Haines index. Continuous fuels, fallen, dead, woody material, ladder fuels (seedling and saplings) and standing dead or dying material will enable torching, crowning out, and spotting. Observed stand density on some slopes will enhance the possibility of a crown fire. Wildfire in the mixed conifer of Hoback Ranches assessment area will be topographically influenced in combination with fuels and wind. The possibility of ignition in both lodgepole/mixed conifer and sagebrush/grass fuel types is high due to vehicular traffic on roads in the assessment area. The fuels assessment area includes numerous topographic features that will increase rates of spread, and allow fires to “roll out” beneath fire fighters or spot over roads. With present fuel loading, the eastern part of the Rim Road, and other mid-slope roads in the assessment area, should not be relied upon as a fuelbreak. The results of the fuel survey are summarized as follows:

- **Slope:** 12.5 percent of the survey sites occurred on slopes that were less than 10 percent (Class A). 37.5 percent occurred on moderate slopes (Class B) and 50 percent occurred on steep slopes (class C).
- **Aspect:** 75 percent of the sites had northern exposures (Class A) while 25 percent were on east (or relatively level) facing slopes (Class B).
- **Elevation:** The elevations for all the survey sites were between 7,100 and 8,250 feet amsl (Class A).
- **Fuel Type:** One hundred percent of the fuel survey points had heavy fuels (Class C).
- **Fuel Density:** One hundred percent of the sites had heavy continuous fuels (class C) with moderate to heavy downed-dead woody fuel and an abundance of fir sapling ladder fuels. All were rated as Fire Behavior Fuel Model 10.
- **Fuel Bed Depth:** One hundred percent of the sites had a fuel bed depth of greater than three feet (Class C).

In an effort to integrate fuel hazard factors, data for fuel attributes (fuel type, density, and depth) were combined; an aggregate relative risk for each survey point was assigned based on the combination of scores for individual factors. Sites with “C” ratings for all three attributes were regarded as having the highest risk; sites with all “A” ratings, the lowest risk. Results are shown on Map 2. Terrain attributes (slope, aspect, elevation) were aggregated in a manner similar to that used for fuel attributes; these data show clear spatial patterns in terrain in the assessment area (Map 3). Data from the fuels hazard assessment are also depicted on Figures 1 and 2.

Figure 1: Hoback Ranches Fuel Hazard Assessment Results (Topography)

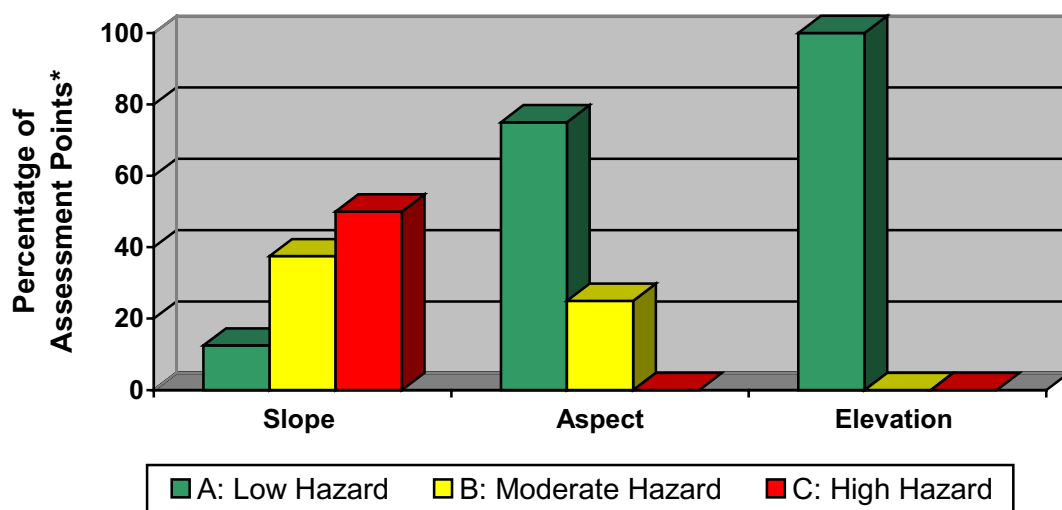


Figure 2: Hoback Ranches Fuel Hazard Assessment Results (Fuels)

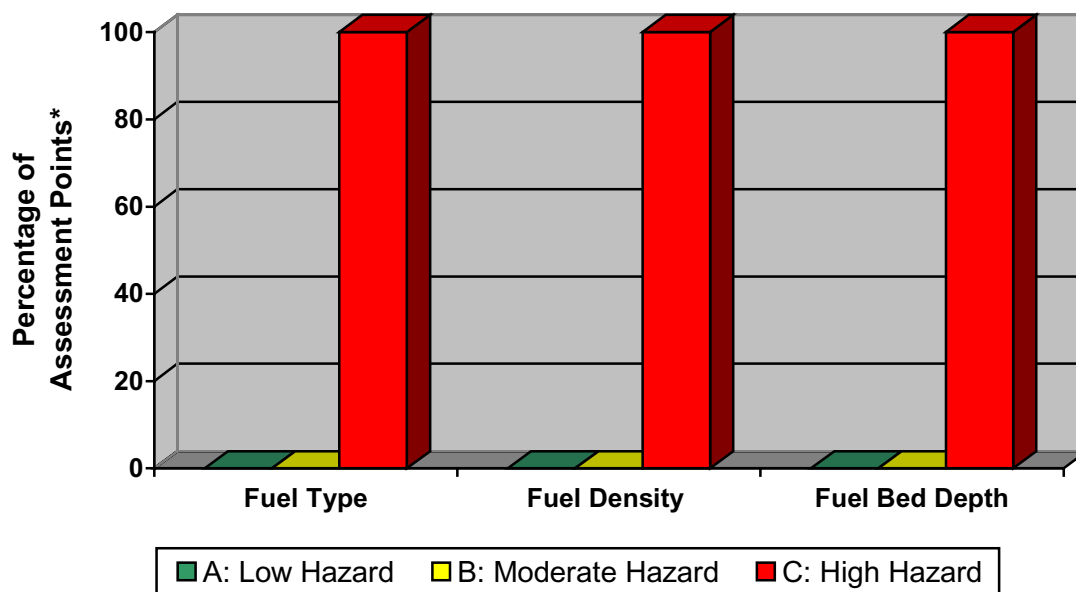


Table 3: Summary of Fuels Hazard Assessment for Hoback Ranches (Form 1)

(See Maps 1, 2, and 3, Attached)

Survey Point	Rating Elements						Picture ID	Comments
	Slope	Aspect	Elevation	Fuel Type	Fuel Density	Fuel Bed Depth		
Township 036N Range 112W								
1	B	A	A	C	C	C	44.12	LP w/subalp.fir, heavy litter w/ladder fuels.
2	B	A	A	C	C	C	72.06	Subalp, DF w/LP, many red-needled, mistletoe present, HDD, ladder fuel. Mixed conifer.
3	C	A	A	C	C	C	72.06	Subalp and DF, even age, HDD, some mistletoe
4	B	B	A	C	C	C	52.94	LP w/Subalp, HDD saplings, ladder fuels
5	C	A	A	C	C	C	57.35	DF w/subalp, moderate down/dead, saplings, ladder fuels
								LP w/mistletoe, red needle, Subalp. Saplings 15 feet in ht. ladder fuel
6	A	B	A	C	C	C	39.71	Moderate Dn.Dd.
Township 036N Range 113W								
8	C	A	A	C	C	C	64.71	DF w/Subapl, HDD, saplings 15-25 ft.
Township 037S Range 111E								
7	C	A	A	C	C	C	61.76	DF w/Subalp HDD, saplings= ladder fuels

A = Class A low fire hazard assessment rating

B = Class B moderate fire hazard assessment rating

C = Class C high fire hazard assessment rating

LP= Lodgepole pine

Subalp= Subalpine fir

DF= Douglas fir

HDD=Heavy down dead

SD= Standing Dead

Dn.= Down

Dd.= Dead

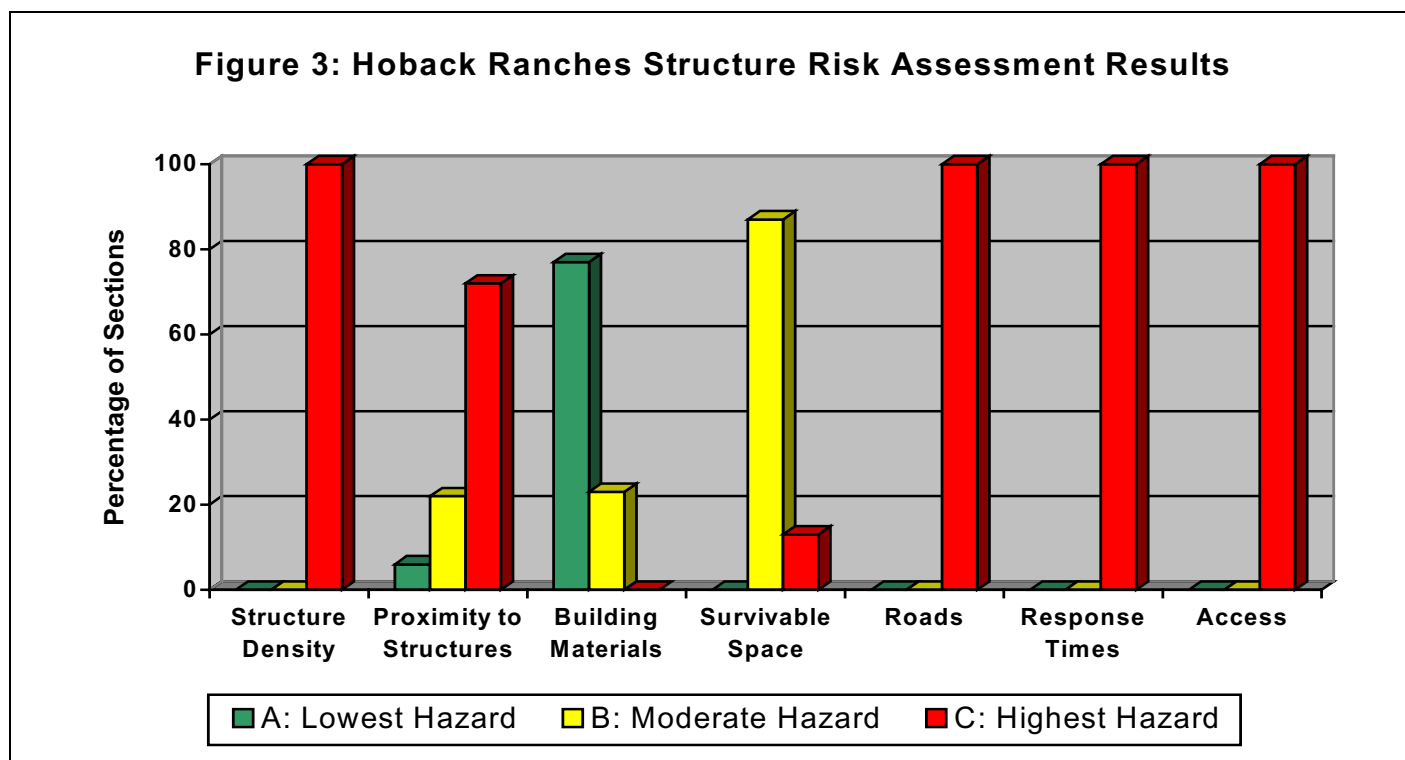
4.2 Form 2: Structural Fire Hazard Assessment

The results of the structure survey are provided in **Table 4**. The data sheets are contained in **Appendix C**. **Maps 4 and 5** spatially illustrate the data from Table 4. Twenty-three and one-half sections were evaluated, 14 of which contained structures such as homes or buildings that occurred on private land within one mile of public land. All structures were located within Hoback Ranches. New structures occurred throughout the assessment area at a low density and at times intermixed with older structures. Most homes had metal roofs and wood or log siding. All sections evaluated had some homes with wildland fuels less than forty feet from the house. The main points of the structure survey are as follows:

- **Structure Density:** One hundred percent of the sections had less than one structure per 10 acres (Class C).
- **Proximity to Structures:** Of the structures surveyed, 72 percent are rated “high hazard” (Class C), 22 percent are rated as moderately hazardous, with fuels within 40 to 100 feet of structures (Class B), and six percent as low hazard, with fuels greater than 100 feet from structures (Class A).
- **Predominant Building Materials:** Seventy-seven percent of the sections with structures had a majority of homes with fire resistant roof and/or siding (Class A). Twenty-three percent had between 10 and 50 percent of structures within constructed with fire resistant roof and/or siding (Class B). Even though most of the structures were roofed with metal or other fire retardant material, all were constructed of log or wooden siding that appeared not to be fire retardant. Roof type totals for all sections are: five composite roofs, one tar roof, nine shake roofs, 89 metal roofs and two foundations without roofs.
- **Survivable Space:** In 87 percent of the sections with structures, 10 to 50 percent of the homes within had survivable space (Class B, 40-100 feet). Thirteen percent contained homes with less than 10 percent having survivable space (Class C, less than 40 feet). The 87 percent/13 percent figure is representative of homeowner awareness and homes in different fuel types (aspen or sagebrush/grass versus mixed conifer). Covenants between Hoback Ranches residents also play a role, especially in the mixed conifer stands.
- **Roads:** One hundred percent of the sections had roads that are somewhat maintained (graveled and graded), but generally narrow with no shoulders (Class C). Pullout areas are widely spread and few turn-around areas exist, except for driveways. As stated, the predominant east/west road, the Rim Road, is in need of additional engineering and support in Section 9.

- **Response Time:** One hundred percent of the sections had a response time of greater than 40 minutes, mainly due to distance from fire suppression forces, and the narrow, steep roads found within the area (Class C). Aerial fire suppression assistance for wildfires will be variable dependent upon commitment. A 40-minute response time for BLM air tankers from Pocatello, Idaho, or Grand Junction, Colorado or from USFS helitack crews/rappellers in Jackson, Wyoming is possible but is not likely and should not be expected.
- **Access:** All sections contain narrow, steep and/or single lane roads (Class C). County fire truck access is from State Highway 189/191 north of Hoback Ranches. Most roads are one way in and one way out. The eastern part of the Rim Road load limit (8,000 lbs.) will not support fire trucks (engines).

A combination of data for roads and response times is presented in Map 4. Overall risk is high in many sections not only because of the long response times but also because of the narrow and steep roads. Combined data for structural conditions (proximity to fuel, building materials, presence of a survivable space) is presented in Map 5. The percentages of sections that received a high ranking for the risk assessment to structures in the assessment area are graphically depicted in **Figure 3**.



* Percentages based on 14 Sections with structures surveyed within the assessment area.

Table 4: Summary of Structural Fire Hazard Assessment (Form 2)

Section No.	Rating Elements					Access	Comments
	Structure Density	Proximity of Fuels	Building Material	Survivable Space	Roads		
Township 36N Range 112W							
10	C	C	A	C	C	C	Lodgepole/mixed conifer, some sage/grass w/aspen, 1 shake roof
3	C	C	A	C	C	C	Mixed conifer, lodgepole, some sage/grass w/aspen
9	C	C	B	C	C	C	Lodgepole/mixed conifer, heavy, steep, road wt. limits.
4	C	C	A	B	C	C	Mixed conifer, lodgepole, some sage/grass and aspen
5	C	C	A	B	C	C	Lodgepole/mixed conifer, with sage/grass and aspen, cabin w/tar roof
6	C	C	A	B	C	C	Lodgepole, sage/grass, willows
7	C	C	A	B	C	C	Aspen, sage/grass, intermittent lodgepole
Township 36N, Range 113E							
1	C	B	A	B	C	C	Sage/grass, aspen, fir and lodgepole. Two shake roofs
2	C	C	C	B	C	C	Sage/grass w/some aspen and mixed conifer. One shake roof
3	C	C	A	B	C	C	Lodgepole, fir, aspen, one shake roof
12	C	B	A	B	C	C	Aspen w/sage/grass, conifer stands, one shake roof
11	C	C	B	B	C	C	Sage/grass with aspen, some conifer, one shake roof
10	C	C	A	C	C	C	Sage/grass with aspen, scattered conifer

A = Class A, low fire hazard assessment rating

B = Class B, moderate fire hazard assessment rating

C = Class C, high fire hazard assessment rating

4.3 Form 3: Community Profile

Table 5 presents the findings of the community assessment regarding the community's attitudes and abilities to respond to wildland fires in the Hoback Ranches assessment area. Initial findings raise a number of concerns about fire risks in the Hoback Ranches assessment area. Specifically, the community was ranked as high risk for emergency operations response time, water systems/sources, structure density, community practices, and fire safety ordinances.

5.0 ON-GOING WILDFIRE HAZARD MITIGATION

Numerous Hoback Ranches homeowners have applied fire safe practices in the areas immediately surrounding homes. These activities include fuel removal and piling, fuel removal and covering with gravel, horse logging for post/poles on approaches or driveways, and thinning of lodgepole pine stands. Removal of sagebrush and thinning piles has been accomplished by hauling materials with a dump truck to a fill area. Additionally, Sublette County Fire personnel removed piles by hand ignition during winter months. It was suggested at the public meeting that the Hoback Ranches' covenants would need to be modified in coordination with the County Fire Department, specifically the covenants banning the cutting of trees 3 inches or greater and the year long burning ban. The Hoback Ranches Fire Committee has developed evacuation plans and designated first responders, check points, and traffic/communications coordinators.

Sublette County Fire personnel have provided the assessment area with assistance and direction to reduce the risks at most home sites. Lookouts, communications, escape routes and safety zones (LCES) have been initiated by the Sublette County Fire Department in cooperation with Hoback Ranches homeowners. This will assist both the Fire Department and homeowners when wildfires are ignited.

The Fire Department is willing to educate and provide fire safety information to any interested group or home.

Table 5: Community Profile Assessment (Form 3)

Community: Hoback Ranches, Bondurant, Wyoming Date: July 17, 2002 Surveyor(s): Brooke Levy

Source(s) of Information: Interviews and Community Meeting

Rating Element	Class A	Class B	Class C	Rating (use A,B, or C)
Community Description	There is a clear line where residential, business, and public structures meet wildland fuels. Wildland fuels do not generally continue into the developed area.	There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area.	The community generally exists where homes, ranches, and other structures are scattered by adjacent to wildland vegetation.	C
Response Times	Prompt response time to interface areas (20 min or less).	Moderate response time to interface areas (20-40 minutes).	Lengthy response to interface areas (40 + minutes).	C
Firefighting Capability	Adequate Structural Fire Department. Sufficient personnel, equipment and wildland firefighting capability and experience.	Inadequate Fire Department. Limited personnel and or equipment but with some wildland fire fighting experience and training.	Fire Department non-existent or untrained and/or equipped to fight wildland fire.	A
Water Supply	Adequate supply of fire hydrants and pressure, and/or open water sources (pools, lakes, reservoirs, rivers, etc.).	Inadequate supply of fire hydrants, or limited pressure. Limited water supply.	No pressure water systems available near interface. No surface water available.	C
Local Emergency Operations Group	Active Emergency Operations Group. Evacuation plans in place.	Limited participation in EOG. Have some form of evacuation procedures	No emergency operations group. No evacuation plans in place.	A
Structure Density	At least one structure per 0-5 acres.	One structure per 5-10 acres.	Less than one structure per 10 acres.	C
Community Planning Practices	County/local laws and zoning ordinances require use of fire safe residential design and adequate ingress/egress of fire suppression resources. Fire Department actively participates in planning process.	Local officials have an understanding of appropriate community planning practices for wildfire loss mitigation. Fire Department has limited input to fire safe development and planning efforts.	Community standards for fire safe development and protection are marginal or non-existent. Little or no effort has been made in assessing and applying measures to reduce wildfire impact.	C
Fire Mitigation Ordinances, Laws, or Regulations in place	Have adopted local ordinances or codes requiring fire safe landscaping, building and planning. Fire Department actively participates in planning process.	Have voluntary ordinances or codes requiring fire safe landscaping and building practices. Fire Department participates in planning process.	No local codes, laws or ordinances requiring fire safe building, landscaping or planning processes.	C

Table 5: Community Profile Assessment (Form 3)

Community: Hoback Ranches, Bondurant, Wyoming **Date:** July 17, 2002 **Surveyor(s):** Brooke Levy

Source(s) of Information: Interviews and Community Meeting

Rating Element	Class A	Class B	Class C	Rating (use A,B, or C)
Fire Department Equipment Status	Good supply of structure and wildland fire apparatus and misc. specialty equipment.	Smaller supply of fire apparatus in fairly good repair with some specialty equipment.	Minimum amount of fire apparatus that is old and in need of repair. None or little specialty equipment.	A
Fire Department training and experience	Large, fully paid Fire Department with personnel that meet NFPA or NWCG training requirements, are experienced in wildland fire and have adequate equipment.	Mixed Fire Department. Some paid and some volunteer personnel. Limited experience, training and equipment to fight wildland fire	Small, all volunteer Fire Department. Limited training, experience and budget with regular turnover of personnel. Do not meet NFPA or NWCG standards.	A/C¹
Community Fire Safe Efforts and programs already in place.	Organized and active groups (Fire Department) providing educational materials and programs for their community.	Limited interest and participation in educational programs. Fire Department does some prevention and public education.	No interest or participation in educational programs. No prevention/ education efforts by Fire Department.	B
Community support and attitudes	Actively supports urban interface plans and actions.	Some participation in urban interface plans and actions.	Opposes urban interface plans and efforts.	A

¹ The fire departments that would respond to a fire in and around Hoback Ranches are highly trained and meet NFPA or NWCG training requirements and are experienced in wildland fire and have adequate equipment. However, the departments are small and composed of volunteers (there are no paid fire fighters).

6.0 VALUES AT RISK

Lives, homes, property, wildlife habitat, recreation, potentially historic/cultural sites, grazing, soil stability, water quality, and timber are the values that are at risk to wildfire within the Hoback Ranches assessment area. Hoback Ranches is bordered by BLM land, private ranches and the Bridger/Teton National Forest, providing numerous four-season recreational opportunities for residents and tourists. In addition, the assessment area is adjacent to State land that provides timber for harvest. Historical sites near the Hoback Ranches assessment include former camping areas of Astorians and various persons of America's "mountain man era" during the early 1800's.